EAST Browser - L11: (120) 10 with mpeg | US 6553070 B2 | Tag: S | Doc: 4/120 | Format : KWIC

File Edit View Tools Window Help

US-PAT-NO: 6553070

DOCUMENT-IDENTIFIER: US 6553070 B2

TITLE: Video-data encoder and recording media wherein a video-data encode program is recorded

----- KWIC -----

Brief Summary Text - BSTX (25):

Further, in an embodiment of the invention, where the encoding is performed according to the MPEG standard, the watermark data are embedded into one or some of macro-blocks determined referring to a criterion defined in connection with anyone of a slice, a picture, a field, a frame, or a GOP.

Detailed Description Text - DETX (3):

FIG. 1 is a block diagram illustrating a first embodiment of the invention, wherein a video-data encoder 100 according to the embodiment comprises; a DCT processor 101 for performing Discrete Cosine Transform of an original image data stream 110 wherein electronic watermark data 102 are to be embedded, a

Details Text Image HTML KWIC

2	US 6567534 B1
3	US 6563936 B2
4	US 6553070 B2
5	US 6530021 B1

Hidenori Nakazawa, et al., "A ... ing on MPEG2 Videos for Co... SCIS 97-31D, Jan. 1997, col... Coding and Information Secu... Hiroshi Ogawa, "A Copyri... Method Using DCT for Digi... 97-31G, Jan. 1997, collection... and Information Security Sy... Adrian G. Bors et al, "Water... Constraints", Proceedings of... ference on Image Processing, ... 231-234.
Frank Hartung et al, "digita... Compressed Video", Proceed... 1996, pp. 205-213.

* cited by examiner

Primary Examiner—Chris K...
Assistant Examiner—Allen W...
(74) *Attorney, Agent, or Firm*...

(57) ABST...

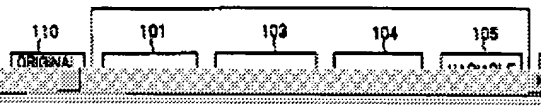
To provide an apparatus for... according to the frequency-d... video data, a video-data enco... forming encoding of an orig... pressed data stream having ... prises; means (101) for transf... into a sequence of processin... data; means (103) for embedd... data into at least one unit o... units; and means (104 and ... pressed data stream by proce... ing units. Therefore, the data ... video data into the frequency ... water-mark data can be pe... additional process, by exploiti... encoding the original video ... stream.

8 Claims, 5 D...

6,246,802 B1 *	6/2001	Fujihara et al.	382/276

FOREIGN PATENT DOCUMENTS

DE	4430864	3/1996
JP	8-241403	9/1996



EAST Browser - L11: (120) 10 with mpeg | US 6567534 B1 | Tag: S | Doc: 2/120 | Format : KWIC

File Edit View Tools Window Help

TITLE: Methods and systems for watermark processing of line art images

----- KWIC -----

Brief Summary Text - BSTX (9):

Most of the prior art in image watermarking has focused on pixelated imagery (e.g. bit-mapped images, JPEG/MPEG imagery, VGA/SVGA display devices, etc.). In most watermarking techniques, the luminance or color values of component pixels are slightly changed to effect subliminal encoding of binary data through the image. (This encoding can be done directly in the pixel domain, or in another domain, such as the DCT domain.) In some systems, isolated pixels are changed in accordance with one or more bits of the binary data; in others, plural domain-related groupings of pixels (e.g. locally adjoining, or corresponding to a given DCT component) are so changed. In all cases, however, pixels have served as the ultimate carriers of the embedded data.

Details | Text | Image | HTML | KWIC

2	US 6567534 B1
3	US 6563936 B2
4	US 6553070 B2
5	US 6530021 B1

OTI

tin, OR

Grubi et al., "Inform... terfeiter," *Proc. 2nd*... Apr. 14–17, 1998, p...

erm of this ... under 35

Boland, "Watermar... tection," Fifth Inter... Its Applications, Co...

minal dis-

Grubi, "Information... falter," Proc. 2d Infi... 1525, pp. 1–15, Apr...

* cited by examiner

on May 6, ...ination-in- ...ay 8, 1995,

on Apr. 16,

Primary Examiner—... (74) *Attorney, Age...* Digimarc Corporati...

(57)

Binary data is emb... later recovery by, an... encounter banknote... scanners, and print... providing nominal li... virtual grid of point... regions. The lumina... changed to effect e... nance may be cha... spacing of the artwo... the artwork.

6 Cl...

104K 1/00 ...0; 382/135 ...2/100, 135, ...2, 287, 51, ..., 901, 902

..... 283/70 ..... 355/231

5,858,814	A	* 1/1999	Moore	382/115
5,843,564	A	* 12/1998	Gasper et al.	428/211
6,081,345	A	* 6/2000	Curry	358/1.9
6,086,706	A	7/2000	Brassil et al.	156/277
6,104,812	A	* 8/2000	Koltai et al.	380/51

EAST Browser - L12: (61) 6 with matrix | US 20020114536 A1 | Tag: S | Doc: 10/61 | Format : KWIC

File Edit View Tools Window Help

registration and calibration

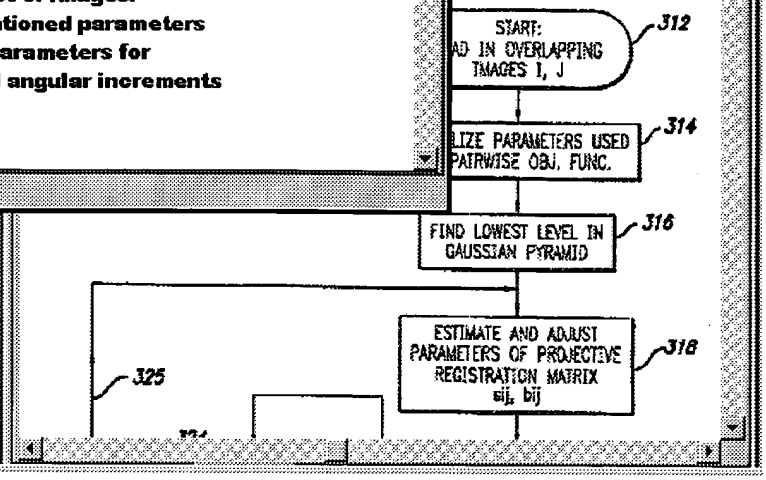
----- KWIC -----

Detail Description Paragraph - DETX (24):

[0048] Furthermore, the system of the present invention has means for a user interface for all phases of the invention. A user may select, among other things, which images are to be registered, and at what arbitrary image plane. The user interface, suitable for display on a computer monitor and with input from a keyboard, mouse pointer, or other I/O device, has fields for any and all internal and external parameters of the projection matrix of the images, including aspect ratio, number of rows of images, the tilt between rows, the angle between photos within a row, the roll of each image taken (e.g., landscape mode), as well as fields for how many horizontal rows of images are to be registered (typically two or more), image center position, focal length of camera, camera orientation with respect to a common reference frame, such as camera pan, tilt, roll and skew, and the brightness and contrast of images. The user interface may have the ability to adjust the aforementioned parameters for each image individually, or may have the ability to adjust parameters for images captured with a particular methodology, such as equal angular increments in latitude and longitude.

Details | Text | Image | HTML | KWIC

9	US 20020145660 A1
10	US 20020114536 A1
11	US 20020113756 A1
12	US 20020105484 A1



EAST Browser - L15: (286) 14 with camera | US 20030044073 | Tag: S | Doc: 15/286 | "Full" 1/26 (Total images 26)

File Edit View Tools Window Help

DOCUMENT-IDENTIFIER: US 20030044073 A1

TITLE: Image recognition/reproduction method and a

------ KWIC ------

Summary of Invention Paragraph - BSTX (12):

[0010] Further, in order to obtain a more detailed three-dimen model relating to the object of interest, there is a need for dets measurement as by a technique for obtaining the shape model image acquired by shape measuring means or by binocular ste As a result, computation costs are high and processing require period of time.

Details | Text | Image | HTML | KWIC

13	US 20030067462 A1
14	US 20030058240 A1
15	US 20030044073 A1
16	US 20030038801 A1

US 20030044073A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2003/0044073 A1

Matsugu et al. (43) Pub. Date: Mar. 6, 2003

(54) IMAGE RECOGNITION/REPRODUCTION METHOD AND APPARATUS

(75) Inventors: Masakazu Matsugu, Chiba-shi (JP); Katsumi Iijima, Tokyo (JP)

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345 Park Avenue
New York, NY 10154-0053 (US)

(21) Appl. No.: 10/233,832

(22) Filed: Oct. 1, 2002

Related U.S. Application Data

(63) Continuation of application No. 08/383,520, filed on Jan. 18, 1995, now Pat. No. 6,463,176, which is a continuation of application No. 08/080,913, filed on Feb. 2, 1993, now abandoned.

(30) Foreign Application Priority Data

Feb. 2, 1994 (JP) 6-010806
May 13, 1994 (JP) 6-100139

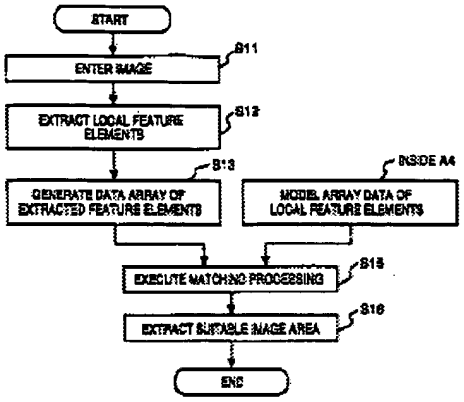
Publication Classification

(51) Int. Cl.[7] G06K 9/34; G06K 9/46; G06K 9/48; G06K 9/52

(52) U.S. Cl. 382/199; 382/209; 382/178

(57) ABSTRACT

An image recognition/reproduction method includes an extraction step of extracting local feature elements of an image, and a selection step of selecting a pair composed of a prescribed local feature element and position information indicative thereof, the pair being such that the distance between a pair composed of a prescribed local feature element and position information indicative thereof and a pair composed of a local feature element extracted at the extraction step and position information indicative thereof is less than a prescribed distance.



EAST Browser - L15: (286) 14 with camera | US 20020060686 A1 | Tag: S | Doc: 49/286 | Format : KWIC

File Edit View Tools Window Help

DOCUMENT-IDENTIFIER: US 20020060686 A1

TITLE: Texture information assignment method, object extraction method, three-dimensional model generating method, and apparatus thereof

----- KWIC -----

Summary of Invention Paragraph - BSTX (9):

[0007] According to this three-dimensional model construction apparatus, an object of interest that is rotated on a turntable is continuously shot by a camera. The silhouette image of the object of interest is extracted from the obtained image by an image processing computer. By measuring the horizontal distance from the contour of the silhouette image to the vertical axis of rotation for the silhouette image, a three-dimensional model is generated according to this horizontal distance and the angle of rotation. More specifically, the contour of the object of interest is extracted from the continuously shot silhouette images to be displayed as a three-dimensional model.

Details | Text | Image | HTML | KWIC

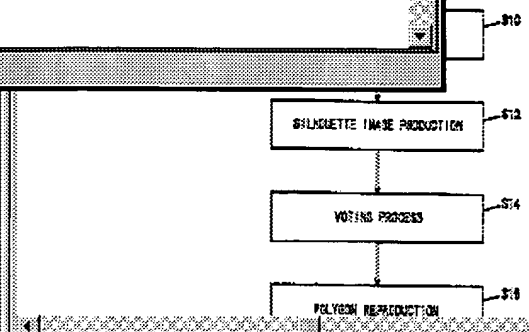
48	US 20020061123 A1
49	US 20020060686 A1
50	US 20020056120 A1
51	US 20020047835 A1

Publication Classification

Int. Cl.[7] .....

U.S. Cl. .....

ABSTRACT



EAST Browser - L12: (61) 6 with matrix | US 6597406 B2 | Tag: S | Doc: 22/61 | Format : KWIC

File Edit View Tools Window Help

US-PAT-NO: 6597406

DOCUMENT-IDENTIFIER: US 6597406 B2

TITLE: System for enhancing a video presentation of a live event

----- KWIC -----

Detailed Description Text - DETX (102):

In the disclosed embodiment, cameras 60, 62 and 64 are each modeled as a 4.times.4 matrix which includes two parts--a fixed transformation (X) which represents the position of the camera in the stadium and its orientation, and a variable transformation (V) which varies with changes in pan angle, tilt angle and the zoom:

Detailed Description Text - DETX (103):

The fixed transformation matrix (X) models x, y, z position as well as fixed yaw, pitch and roll representing the camera's mount orientation:

Details | Text | Image | HTML | KWIC

20	US 20010005218 A1
21	US 6597818 B2
22	US 6597406 B2
23	US 6549651 B2

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WO93/02524 2/1993

(List continued on next

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lay 2000—The Ultimate Workstaior
rs and Producers, Orad Hi-Tec Sys
Track, GPS Tracking System for
adcast Coverege of the America's
Track Technical Overview, 1992."
Viz Software Documentation, 199

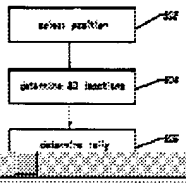
nary Examiner—David E. Harvey
Attorney, Agent, or Firm—Via
mon & DeNiro LLP

ABSTRACT

hree-dimensional model is created
mant to be captured on video. A cam
and/or zoom sensors. An operator sel
ironment. The three-dimensional m
e the three-dimensional coordina
cted by the operator. Information
/or zoom sensors is used to tr
ensional coordinates to a two-dim
video from the camera. Using t
ition of the video, a graphic is pr
o such that the graphic appears t
tion in the environment.

598, 599, 600, 706; H04N 5/265, 5/272, 5/268, 5/275

85 Claims, 25 Drawing



EAST Browser - L3: (41) 1 with 2 | US 6560281 | Tag: S | Doc: 13/41 | "Full" 3/10 (Total images 10)

File Edit View Tools Window Help

into a warped sequence of distinct and stationary scene chang
each corresponding to a speaker slide, wherein each scene ch
of an associated subset of the image frames. A key frame is g
scene change representative of the associated subset. Each k
compared with the associate subset for identifying image fram
desired affordances such as semantically significant speaker g
pointing. The condensed version of the video is compiled as ar
the key frames and the frames with the desired affordance ima
redundant image frames and nuisance variations can be delete
video sequence so that the digest is a much more compact and
version of the technical talk. Lastly, the condensed version is
time or an audio for a useful representation of the talk.

Claims Text - CLTX (1):

1. A method for generating a condensed version of a video s
for publication as an annotated video comprising steps of: stor
sequence as a set of image frames; stabilizing the image fram
sequence of distinct and stationary scene changes wherein ea
comprised of an associated subset of the image frames; gener
for each scene change representative of the associated subset
generating a template image frame from the associated subset
filtering of the associated subset and matching the template in
one of the associated subset, wherein the closest one compris

Details Text Image HTML KWIC

13	US 6560281 B1
14	US 6542773 B2
15	US 6452615 B1
16	US 6424989 B1

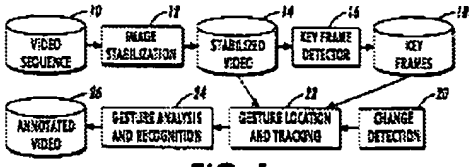


FIG. 1

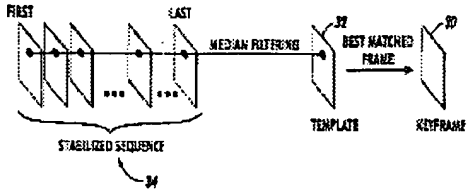


FIG. 2

EAST Browser - L3: [41] 1 with 2 | US 6389311 B1 | Tag: S | Doc: 17/41 | Format : KWIC

File Edit View Tools Window Help

US-PAT-NO: 6389311

DOCUMENT-IDENTIFIER: US 6389311 B1

TITLE: Systems and methods using annotated images for controlling the use of diagnostic or therapeutic instruments in interior body regions

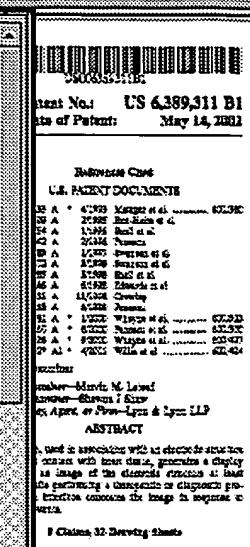
----- KWIC -----

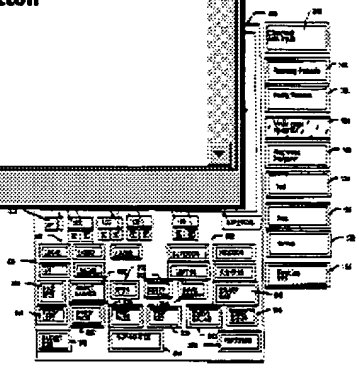
Detailed Description Text - DETX (197):

When the CREATE control button 430 is selected, the application A4 freezes the real-time image 416 (or a prescribed sequence of video images 416) so that it can be grabbed for processing. When the EDIT control button 438 is selected, the operator can mark or annotate the grabbed image or video image sequence with comments, in the same manner permitted by the INS MARKER button 390 of application A3, which has been previously described (see FIG. 19).

Details | Text | Image | HTML | KWIC

15	US 6452615 B1
16	US 6424989 B1
17	US 6389311 B1
18	US 6385245 B1





EAST Browser - L3: (41) 1 with 2 | US 6208353 B1 | Tag: S | Doc: 23/41 | Format : KWIC

File Edit View Tools Window Help

US-PAT-NO: 6208353

DOCUMENT-IDENTIFIER: US 6208353 B1

TITLE: Automated cartographic annotation of digital images

------ KWIC ------

Detailed Description Text - DETX (34):

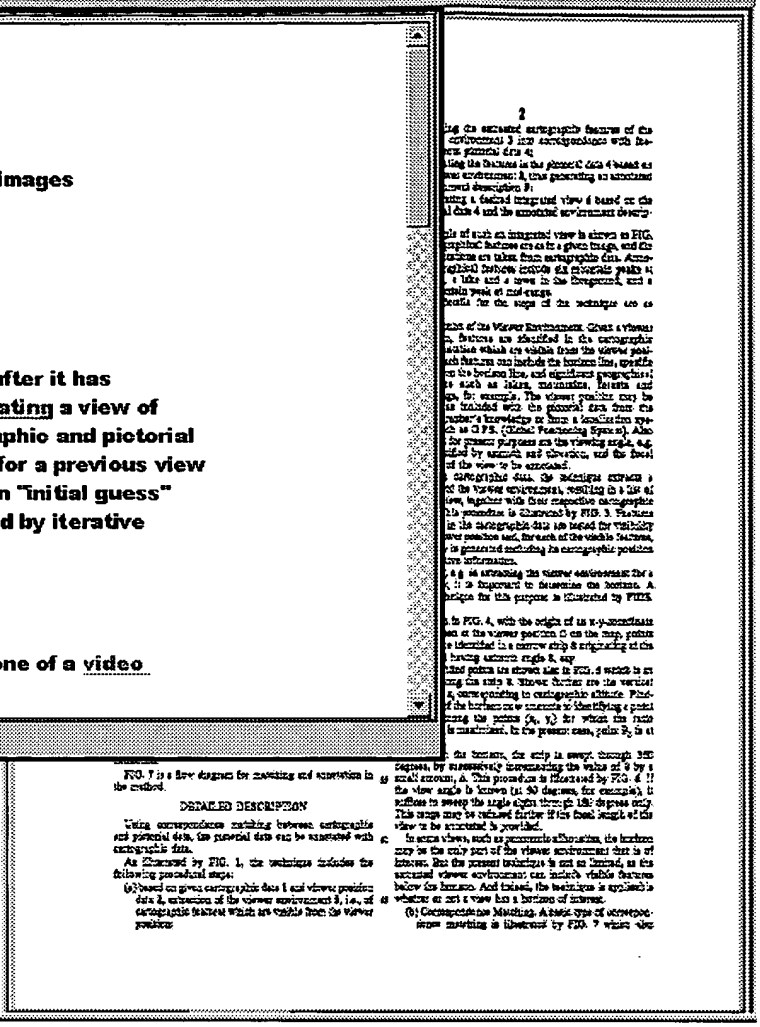
In a further application, a video sequence can be annotated after it has been recorded, e.g. as a travel log. In either case, when annotating a view of a video sequence, correspondence matching between cartographic and pictorial features can take advantage of a correspondence established for a previous view in the sequence. The previous correspondence can serve as an "initial guess" from which the desired new correspondence can be established by iterative refinement.

Claims Text - CLTX (14):

10. The method of claim 1, wherein the annotated image is one of a video sequence of images.

Details | Text | Image | HTML | KWIC

21	US 6289239 B1
22	US 6233590 B1
23	US 6208353 B1
24	US 6192266 B1



EAST Browser - L5: (39) 1 with 4 | US 6571024 | Tag: S | Doc: 16/39 | "Full" 1/20 (Total images 20)

File Edit View Tools Window Help

...move routine may be used to insert a synthetic object into ...
video sequence based on the pose and geometric information ...
calculate all other required object views of the synthetic objec...
remaining frames using the pose and geometric information ac...
of the multi-view three dimensional estimation routine. As suc...
object is inserted into the scene and appears as a "real" objec...
imaged scene.

Claims Text - CLTX (11):

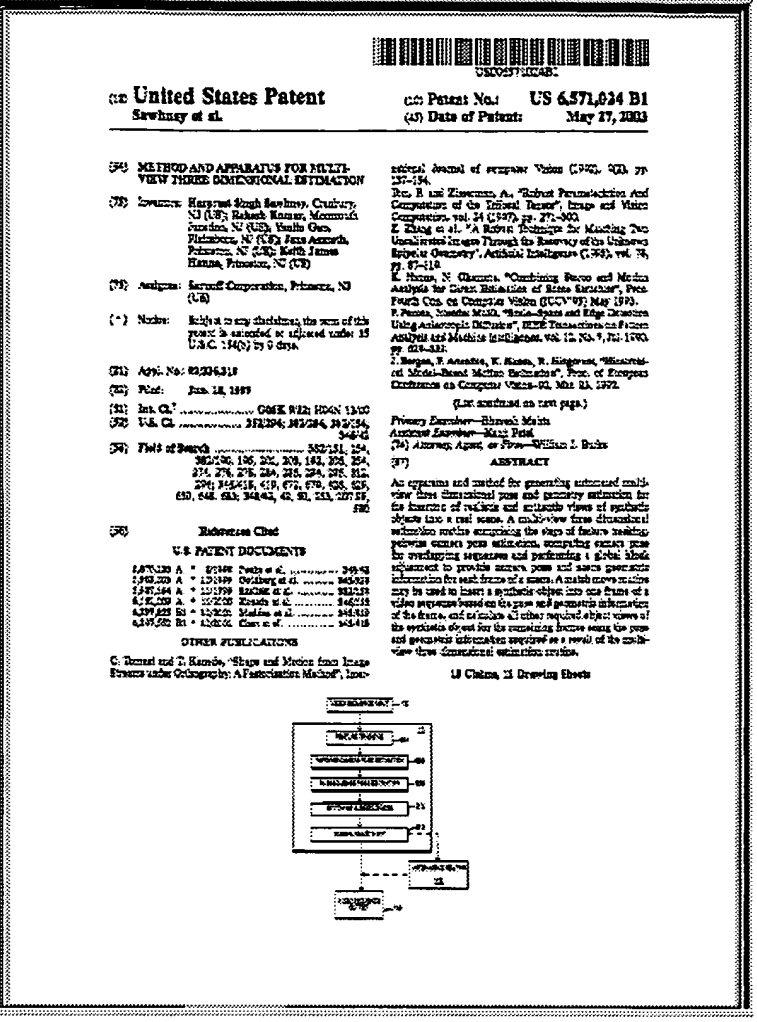
11. The apparatus of claim 9 further comprising: means for i... synthetic object into a frame of said video sequence where the... geometry of said synthetic object is based on said computed o... said frame.

Claims Text - CLTX (12):

12. The apparatus of claim 11 further comprising: means for ... synthetic object in a plurality of frames in said video sequence... sizing said placed synthetic object based upon said inserted fr...

Details | Text | Image | HTML | KWIC

14	US 6680976 B1
15	US 6600491 B1
16	US 6571024 B1
17	US 6553150 B1



US006571024B1

(12) **United States Patent**
Sawhney et al.

(10) Patent No.: US 6,571,024 B1
(45) Date of Patent: May 27, 2003

(54) METHOD AND APPARATUS FOR MULTI-VIEW THREE DIMENSIONAL ESTIMATION

(75) Inventors: Harpreet Singh Sawhney, Cranbury, NJ (US); Rakesh Kumar, Monmouth Junction, NJ (US); Venkata Gutta, Plainsboro, NJ (US); Jane Annette, Princeton, NJ (US); Keith James Hanna, Princeton, NJ (US)

(73) Assignee: Sarnoff Corporation, Princeton, NJ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/206,319

(22) Filed: Dec. 18, 1998

(51) Int. Cl.[7] G06K 9/32; H04N 13/00

(52) U.S. Cl. 382/294; 382/284; 382/154; 348/42

(58) Field of Search 382/151, 154, 282/285, 106, 209, 162, 295, 254, 274, 276, 276, 284, 285, 294, 295, 312, 296; 345/418, 419, 473, 475, 555, 629, 630, 648, 653; 348/42, 48, 50, 333, 207.99, 580

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6,208,347 B1 * 3/2001 Migdal et al. 345/419
6,219,444 B1 * 4/2001 Shashua et al. 382/154

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K. Hanna, N. Okamoto, "Combining Stereo and Motion Analysis for Direct Estimation of Scene Structure", Proc. Fourth Int. on Computer Vision (ICCV'93), May 1993.

F. Ferrie, Martin Levine, "Deriving Coarse and Edge Descriptors Using Anisotropic Diffusion", IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 12, No. 9, pp. 1993, pp. 826-833.

J. Bergen, P. Anandan, K. Hanna, R. Hingorani, "Hierarchical Model-Based Motion Estimation", Proc. of European Conference on Computer Vision-92, May 23, 1992.

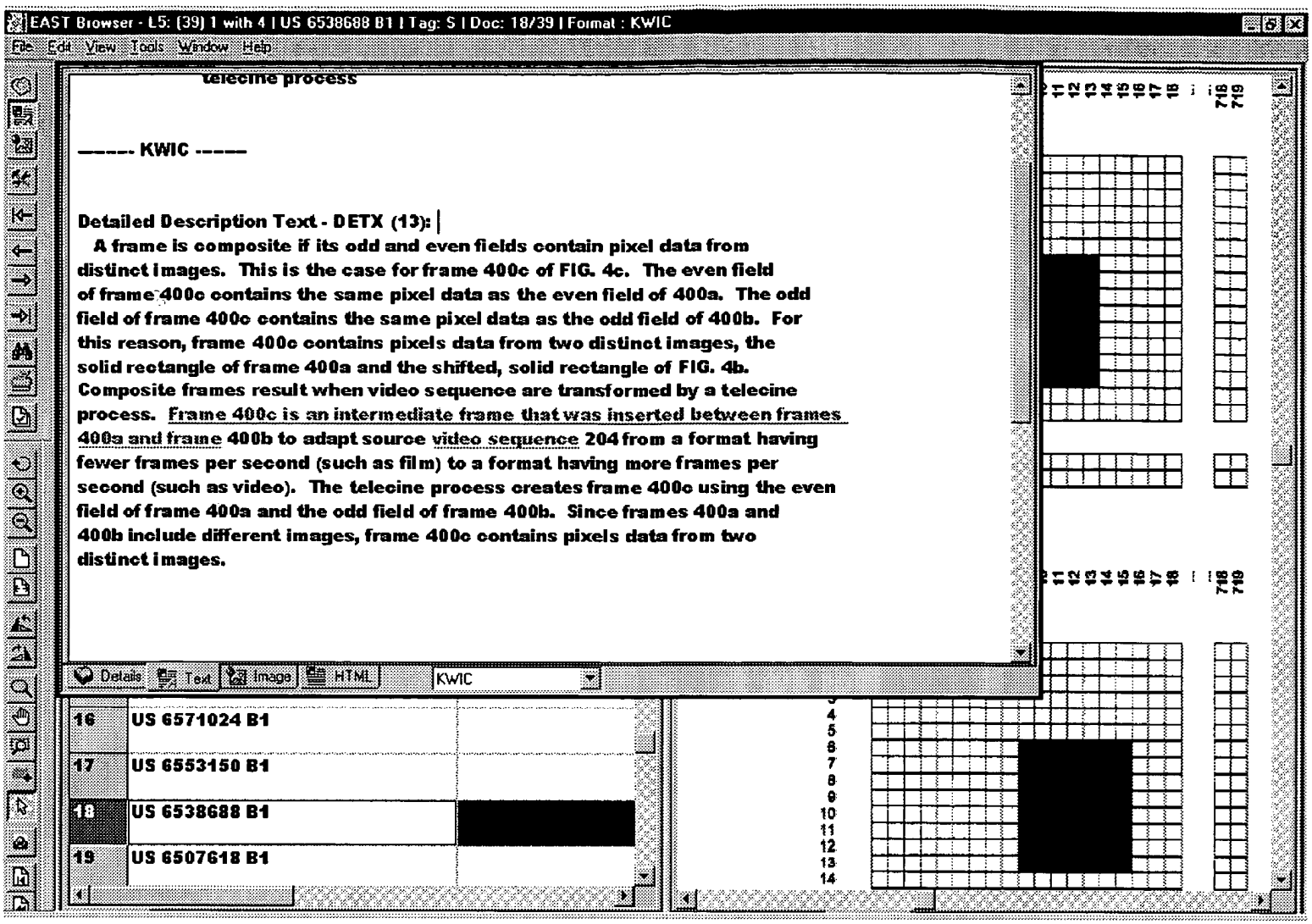
(List continued on next page.)

Primary Examiner—Bhavesh Mehta
Assistant Examiner—Kanji Patel
(74) *Attorney, Agent, or Firm*—William J. Burke

(57) ABSTRACT

An apparatus and method for generating estimated multi-view three dimensional pose and geometry estimation for the insertion of realistic and accurate views of synthetic objects into a real scene. A multi-view three dimensional estimation routine computing the steps of feature tracking between certain pose estimates, computing certain poses by overlapping sequences and performing a global block adjustment to provide accurate pose and scene geometric information for each frame of a scene. A multi-view routine may be used to insert a synthetic object into one frame of a video sequence based on the pose and geometric information of the frame, and calculate all other required object views of the synthetic object for the remaining frames using the pose and geometric information acquired as a result of the multi-view three dimensional estimation routine.

18 Claims, 11 Drawing Sheets


EAST Browser - L5: (39) 1 with 4 | US 6538688 B1 | Tag: S | Doc: 18/39 | Format : KWIC
File Edit View Tools Window Help
telecine process
----- KWIC -----
Detailed Description Text - DETX (13):
A frame is composite if its odd and even fields contain pixel data from distinct images. This is the case for frame 400c of FIG. 4c. The even field of frame 400c contains the same pixel data as the even field of 400a. The odd field of frame 400c contains the same pixel data as the odd field of 400b. For this reason, frame 400c contains pixels data from two distinct images, the solid rectangle of frame 400a and the shifted, solid rectangle of FIG. 4b. Composite frames result when video sequence are transformed by a telecine process. Frame 400c is an intermediate frame that was inserted between frames 400a and frame 400b to adapt source video sequence 204 from a format having fewer frames per second (such as film) to a format having more frames per second (such as video). The telecine process creates frame 400c using the even field of frame 400a and the odd field of frame 400b. Since frames 400a and 400b include different images, frame 400c contains pixels data from two distinct images.
Details Text Image HTML KWIC
16 US 6571024 B1
17 US 6553150 B1
18 US 6538688 B1
19 US 6507618 B1

EAST Browser - L5: (39) 1 with 4 | US 5462275 A | Tag: S | Doc: 27/39 | Format : KWIC

File Edit View Tools Window Help

correspond with Frame Position 2 (the beginning of the target Audio Window).

Detailed Description Text - DETX (155):

The replay portion of the video play sequence will always start after the ball has been taken out of play and no more new action pertinent to the game occurs. The replay portion of the play sequence will recap the current play while the players are entering their next game decisions. The replay will always continue to the end of the video play sequence. In this way, the final frame of every video play sequence will always be either in slow motion, a freeze frame or a graphics insert and thus provide a universal edit point back into the real time motion of the beginning of the next video play sequence and avoid visual or audible continuity problems with the edit. The end of the video play sequence will always edit to the next video play sequence with a wipe effect so that it psychologically brings the viewer back into real time without causing time disorientation.

Details Text Image HTML KWIC

25	US 6137912 A
26	US 5695401 A
27	US 5462275 A
28	US 4724491 A

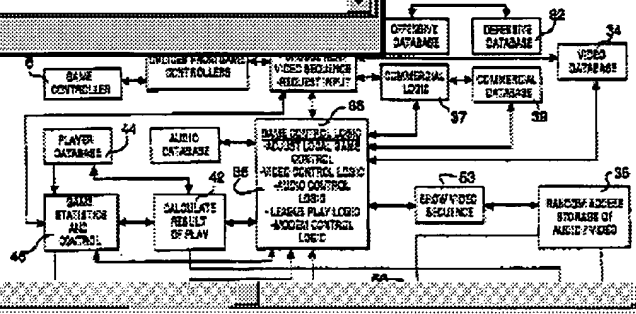
8/1988 WIPO

Examiner—Jessica J. Harrison
Examiner—Kerry Owens
Agent, or Firm—Burke-Robertson

ABSTRACT

interactive live action football game which ... for example on a television screen. A play ... ive action football game is provided which ... n access storage and retrieval device and a ... idinal, pre-recorded action football plays ... ion of players of opposite teams. This infor... n random access storage and retrieval de... ble according to type of play. The invention ... es a microprocessor and microprocessor ... electronically associated with the random ... and retrieval device. The microprocessor ... d to enable one or more users to select in ... the control device, different football plays ... type. A display device is electronically as... microprocessor to enable the selected pla... by the users. The microprocessor is furt... d to evaluate and cumulate play results ... the users in a meaningful way. It is an obje... invention to provide an interactive, live ... game that can be played by one or more p... bar or the like. It is a further object of thi... n to provide such a television game which ... to select full motion video images, as op... r graphics, to play such game and deter...

19 Claims, 7 Drawing Sheets



EAST Browser - L5: (39) 1 with 4 | WO 9726758 A1 | Tag: 5 | Doc: 36/39 | "Full" 19/23 (Total images 23)

File Edit View Tools Window Help

TITLE: Virtual objects insertion into video sequence of frames - detecting two frames with same feature and detecting point subset in other frames, to site virtual object in defined place in both frames, select object reference points, computing position and insert object in each frame

------ KWIC ------

Title - TIX (1):

Virtual objects insertion into video sequence of video frames two frames with same feature point set and detecting point sub frames, to site virtual object in defined place in both frames, se object reference points, computing position and inserting objec

Standard Title Terms - TTX (1):

VIRTUAL OBJECT INSERT VIDEO SEQUENCE VIDEO FRAME POINT SET DETECT POINT SUBSET FRAME SITE VIRTUAL OBJ SELECT OBJECT REFERENCE POINT COMPUTATION POSITION

Details | Text | Image | HTML | KWIC

34	US 20030076334 A
35	US 6181382 B
36	WO 9726758 A
37	US 5481307 A

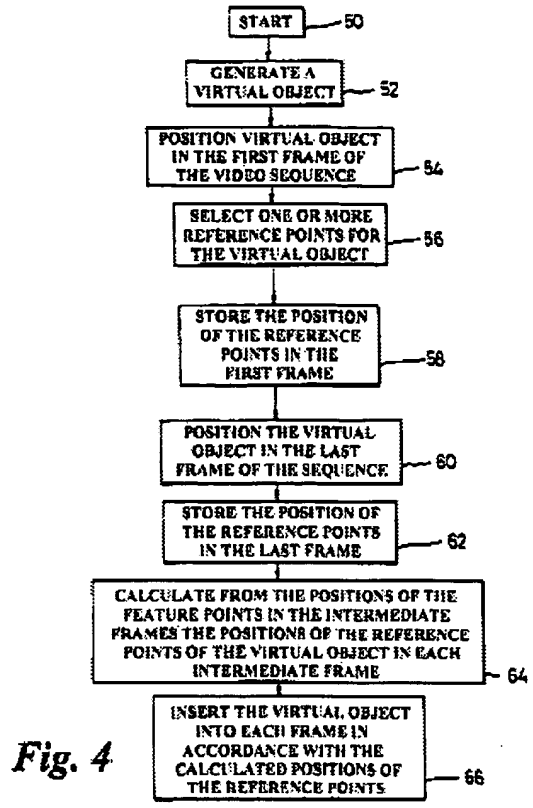


Fig. 4

EAST Browser - L5: (39) 1 with 4 | WO 9726758 A1 | Tag: 5 | Doc: 36/39 | "Full" 18/23 (Total images 23)

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WO 97/26758 PCT/GB97/00023

3/5

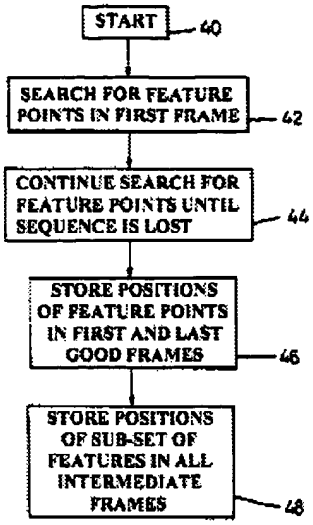

Fig. 3

SUBSTITUTE SHEET (RULE 26)

EAST Browser - L7: (38) 1 with 6 | US 6559884 B1 | Tag: S | Doc: 13/38 | Format : KWIC

File Edit View Tools Window Help

US-PAT-NO: 6559884

DOCUMENT-IDENTIFIER: US 6559884 B1

TITLE: Virtual studio position sensing system

------ KWIC ------

Abstract Text - ABTX (1):

Apparatus and method for inserting virtual objects into a video sequence including a camera position sensing system which uses LED's to provide perspective information for the camera sensing system thereby allowing natural scenery to be used.

Details | Text | Image | HTML | KWIC

11	US 6626117 B1
12	US 6578819 B2
13	US 6559884 B1
14	US 6381362 B1

EAST Browser - L7: (38) 1 with 6 | US 6381362 B1 | Tag: S | Doc: 14/38 | Format : KWIC

File Edit View Tools Window Help

TITLE: Method and apparatus for including virtual ads in video presentations

----- KWIC -----

Detailed Description Text - DETX (10):

Method 1: The size of region 23 is definable in terms of geometric parameters. In this case the region is rectangular and has a width and height. In a first method the location of region 23 may be pre-determined within a selected video frame or a sequence of video frames by applying known geometric relational-dimensioning and known camera-angle and camera-position parameters. Software at editing studio 19 or the ISP in this method, having access to a geometric model of stadium 13 and all camera parameters is used to prepare metadata expressing one or more regions for later implanting of virtual content. The location and size of each region is ultimately expressed in terms of pixel locations (X-Y coordinates) within each video frame as viewed on a display. Region 23, as seen by viewers watching a video, will be a location within a selected sequence of video frames to which a virtual ad will be implanted according to an embodiment of the present invention.

Details | Text | Image | HTML | KWIC

12	US 6578819 B2	
13	US 6559884 B1	
14	US 6381362 B1	
15	US 6320624 B1